

WHAT IS CLAIMED IS:

5

1. A position control method for
controlling a position of an object lens in a direction
perpendicular to a tangential direction of a spiral
track or of concentric tracks formed on a recording
10 surface of a recording medium without a guide groove,
said position control method comprising:

a first step of trying to read a
predetermined data recorded on the recording medium;

a second step of determining whether or not
15 the predetermined data is readable; and

a third step of, according to whether or not
the predetermined data is readable, switching a
criterion for controlling the position of the object
lens based on a tracking error signal.

20

2. The position control method as claimed
25 in claim 1, wherein:

the third step comprises a step of:

if the predetermined data is not readable,
switching to a criterion that includes reversing a
polarity of the tracking error signal and controlling
5 the position of the object lens based on the reversed-
polarity tracking error signal.

10

3. The position control method as claimed
in claim 1, wherein:

the third step comprises a step of:

if the predetermined data is not readable,
15 switching to a criterion that includes shifting an on-
track determination position in the tracking error
signal by a predetermined amount and controlling the
position of the object lens with the tracking error
signal, said on-track determination position of the
20 tracking error signal being a position at which it is
determined that on-track occurs.

25

4. The position control method as claimed
in claim 3, wherein:

the predetermined amount equals half of a
wavelength of a waveform of the tracking error signal.

5

5. The position control method as claimed
10 in claim 1, wherein:

the predetermined data includes an address
data.

15

6. The position control method as claimed
in claim 1, wherein:

the first step is performed during a seek
20 operation of the object lens.

25

7. The position control method as claimed

in claim 1, wherein:

the first step is performed when determining
a type of the recording medium.

5

8. The position control method as claimed
in claim 1, wherein:

10 the first step is performed when reproducing
a data recorded on the recording medium.

15

9. A position control method for
controlling a position of an object lens in a direction
perpendicular to a tangential direction of a spiral
track or of concentric tracks formed on a recording
20 surface of a recording medium having a plurality of
guide grooves, said position control method comprising:

a first step of trying to read a
predetermined data recorded in the guide grooves or in
a region between two of the guide grooves on the
25 recording medium following a criterion for controlling

the object lens based on a tracking error signal with respect to the guide grooves or a tracking error signal with respect to the region between two of the guide grooves;

5 a second step of determining whether or not the predetermined data is readable; and

 a third step of, according to whether or not the predetermined data is readable, switching the criterion and trying again to read the predetermined data recorded in the guide grooves or in the region
10 between two of the guide grooves.

15

10. The position control method as claimed in claim 9, wherein:

the third step comprises a step of:

if the predetermined data is not readable,
20 switching to a criterion that includes reversing a polarity of the tracking error signal and controlling the position of the object lens based on the reversed-polarity tracking error signal.

25

11. The position control method as claimed
in claim 9, wherein:

5 the third step comprises a step of:

if the predetermined data is not readable,
switching to a criterion that includes shifting an on-
track determination position in the tracking error
signal by a predetermined amount and controlling the
10 position of the object lens with the tracking error
signal, said on-track determination position of the
tracking error signal being a position at which it is
determined that on-track occurs.

15

12. The position control method as claimed
in claim 11, wherein:

20 the predetermined amount equals half of a
wavelength of a waveform of the tracking error signal.

25

13. The position control method as claimed
in claim 9, wherein:

the predetermined data includes an address
data.

5

14. The position control method as claimed
10 in claim 9, wherein:

the first step is performed during a seek
operation of the object lens.

15

15. The position control method as claimed
in claim 9, wherein:

the first step is performed when determining
20 a type of the recording medium.

25

16. The position control method as claimed

in claim 9, wherein:

the first step is performed when reproducing
a data recorded on the recording medium.

5

17. A program executable on a computer for
controlling an optical disk device that emits a light
10 beam on a recording surface of a recording medium
without a guide groove and receives light reflected
from the recording surface of the recording medium,
said program comprising:

a first step of trying to read a
15 predetermined data recorded on the recording medium in
response to a control request for controlling a
position of an object lens in a direction perpendicular
to a tangential direction of a spiral track or of
concentric tracks formed on the recording surface of
20 the recording medium;

a second step of determining whether or not
the predetermined data is readable; and

a third step of, according to whether or not
the predetermined data is readable, switching a
25 criterion for controlling the position of the object

lens based on a tracking error signal.

5

18. The program as claimed in claim 17,
wherein:

the third step comprises a step of:

if the predetermined data is not readable,
10 switching to a criterion that includes reversing a
polarity of the tracking error signal and controlling
the position of the object lens based on the reversed-
polarity tracking error signal.

15

19. The program as claimed in claim 17,
wherein:

20 the third step comprises a step of:

if the predetermined data is not readable,
switching to a criterion that includes shifting an on-
track determination position in the tracking error
signal by a predetermined amount and controlling the
25 position of the object lens with the tracking error

signal, said on-track determination position of the tracking error signal being a position at which it is determined that on-track occurs.

5

20. The program as claimed in claim 19,
wherein:

10 the predetermined amount equals half of a wavelength of a waveform of the tracking error signal.

15

21. The program as claimed in claim 17,
wherein:

the predetermined data includes an address data.

20

22. A program executable on a computer for
25 controlling an optical disk device that emits a light

beam on a recording surface of a recording medium having a plurality of guide grooves and receives light reflected from the recording surface, said program comprising:

5 a first step of, in response to a control request for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on the recording surface of the recording medium, trying to
10 read a predetermined data recorded in the guide grooves or in a region between two of the guide grooves on the recording medium following a criterion for controlling the object lens based on a tracking error signal with respect to the guide grooves or a tracking error signal
15 with respect to the region between two of the guide grooves;

 a second step of determining whether or not the predetermined data is readable; and

 a third step of, according to whether or not
20 the predetermined data is readable, switching the criterion and trying again to read the predetermined data recorded in the guide grooves or in the region between two of the guide grooves.

23. The program as claimed in claim 22,
wherein:

5 the third step comprises a step of:
 if the predetermined data is not readable,
switching to a criterion that includes reversing a
polarity of the tracking error signal and controlling
the position of the object lens based on the reversed-
10 polarity tracking error signal.

15 24. The program as claimed in claim 22,
wherein:

 the third step comprises a step of:
 if the predetermined data is not readable,
switching to a criterion that includes shifting an on-
20 track determination position in the tracking error
signal by a predetermined amount and controlling the
position of the object lens with the tracking error
signal, said on-track determination position of the
tracking error signal being a position at which it is
25 determined that on-track occurs.

5 25. The program as claimed in claim 24,
wherein:

the predetermined amount equals half of a
wavelength of a waveform of the tracking error signal.

10

26. The program as claimed in claim 22,
wherein:

15 the predetermined data includes an address
data.

20

27. A storage medium for storing a program
executable on a computer for controlling an optical
disk device that emits a light beam on a recording
surface of a recording medium without a guide groove
25 and receives light reflected from the recording surface

of the recording medium, said program comprising:

a first step of trying to read a
predetermined data recorded on the recording medium in
response to a control request for controlling a
5 position of an object lens in a direction perpendicular
to a tangential direction of a spiral track or of
concentric tracks formed on the recording surface of
the recording medium;

a second step of determining whether or not
10 the predetermined data is readable; and

a third step of, according to whether or not
the predetermined data is readable, switching a
criterion for controlling the position of the object
lens based on a tracking error signal.

15

28. A storage medium for storing a program
20 executable on a computer for controlling an optical
disk device that emits a light beam on a recording
surface of a recording medium having a plurality of
guide grooves and receives light reflected from the
recording surface of the recording medium, said program
25 comprising:

a first step of, in response to a control request for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on the recording surface of the recording medium, trying to
5 read a predetermined data recorded in the guide grooves or in a region between two of the guide grooves on the recording medium following a criterion for controlling the object lens based on a tracking error signal with
10 respect to the guide grooves or a tracking error signal with respect to the region between two of the guide grooves;

a second step of determining whether or not the predetermined data is readable; and

15 a third step of, according to whether or not the predetermined data is readable, switching the criterion and trying again to read the predetermined data recorded in the guide grooves or in the region between two of the guide grooves.

20

29. A position control device for
25 controlling a position of an object lens in a direction

perpendicular to a tangential direction of a spiral track or of concentric tracks formed on a recording surface of a recording medium without a guide groove, said position control device comprising:

5 a trial unit configured to try to read a predetermined data recorded on the recording medium; and

 a control unit configured to determine whether or not the predetermined data is readable, and
10 according to whether or not the predetermined data is readable, to switch a criterion for controlling the position of the object lens based on a tracking error signal for control of the position of the object lens.

15

30. The position control device as claimed in claim 29, wherein:

20 if the predetermined data is not readable, the control unit switches to a criterion that includes reversing a polarity of the tracking error signal and controlling the position of the object lens based on the reversed-polarity tracking error signal.

25

31. The position control device as claimed
5 in claim 29, wherein:

if the predetermined data is not readable,
the control unit switches to a criterion that includes
shifting an on-track determination position in the
tracking error signal by a predetermined amount and
10 controlling the position of the object lens with the
tracking error signal, said on-track determination
position of the tracking error signal being a position
at which it is determined that on-track occurs.

15

32. The position control device as claimed
in claim 31, wherein:

20 the predetermined amount equals half of a
wavelength of a waveform of the tracking error signal.

25

33. The position control device as claimed
in claim 29, wherein:

the predetermined data includes an address
data.

5

34. A position control device for
10 controlling a position of an object lens in a direction
perpendicular to a tangential direction of a spiral
track or of concentric tracks formed on a recording
surface of a recording medium having a plurality of
guide grooves, said position control device comprising:

15 a trial unit configured to try to read a
predetermined data recorded in the guide grooves or in
a region between two of the guide grooves on the
recording medium following a criterion for controlling
the object lens based on a tracking error signal with
20 respect to the guide grooves or the region between two
of the guide grooves; and

a control unit configured to determine
whether or not the predetermined data is readable, and
according to whether or not the predetermined data is
25 readable, to change the criterion and to try again to

read the predetermined data recorded in the guide
grooves or in a region between two of the guide grooves.

5

35. The position control device as claimed
in claim 34, wherein:

if the predetermined data is not readable,
10 the control unit switches to a criterion that includes
reversing a polarity of the tracking error signal and
controlling the position of the object lens based on
the reversed-polarity tracking error signal.

15

36. The position control device as claimed
in claim 34, wherein:

20 if the predetermined data is not readable,
the control unit switches to a criterion that includes
shifting an on-track determination position in the
tracking error signal by a predetermined amount and
controlling the position of the object lens with the
25 tracking error signal, said on-track determination

position of the tracking error signal being a position
at which it is determined that on-track occurs.

5

37. The position control device as claimed
in claim 36, wherein:

the predetermined amount equals half of a
10 wavelength of a waveform of the tracking error signal.

15

38. The position control device as claimed
in claim 34, wherein:

the predetermined data includes an address
data.

20

39. An optical disk device for reproducing
predetermined data on a recording medium without a
25 guide groove, said optical disk device comprising:

a light source;

an optical system that includes an object
lens for condensing a light beam from the light source
to a recording surface of the recording medium and
5 directs a light beam reflected from the recording
surface to a predetermined light reception position;

a light detection unit arranged at the light
reception position;

a position control device for controlling a
10 position of the object lens in a direction
perpendicular to a tangential direction of a spiral
track or of concentric tracks formed on the recording
surface of the recording medium; and

a processing unit configured to perform
15 reproducing the predetermined data on a recording
medium,

wherein:

said position control device comprises:

a trial unit configured to try to read a
20 predetermined data recorded on the recording medium;
and

a control unit configured to determine
whether or not the predetermined data is readable, and
according to whether or not the predetermined data is
25 readable, to switch a criterion for controlling the

position of the object lens based on a tracking error signal for control of the position of the object lens.

5

40. An optical disk device for reproducing predetermined data on a recording medium having a plurality of guide grooves, said optical disk device
10 comprising:

a light source;

an optical system that includes an object lens for condensing a light beam from the light source to a recording surface of the recording medium and
15 directs a light beam reflected from the recording surface to a predetermined light reception position;

a light detection unit arranged at the light reception position;

a position control device for controlling a
20 position of the object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on the recording surface of the recording medium; and

a processing unit configured to perform
25 reproducing the predetermined data on a recording

medium,

wherein:

said position control device comprises:

a trial unit configured to try to read a
5 predetermined data recorded in the guide grooves or in
a region between two of the guide grooves on the
recording medium following a criterion for controlling
the object lens based on a tracking error signal with
respect to the guide grooves or the region between two
10 of the guide grooves; and

a control unit configured to determine
whether or not the predetermined data is readable, and
according to whether or not the predetermined data is
readable, to change the criterion and to try again to
15 read the predetermined data recorded in the guide
grooves or in a region between two of the guide grooves.